

WHAT IS CLAIMED IS:

1. A router connected a core network, a first local area network(LAN) belonging to a first virtual private network(VPN), a second LAN belonging to a second VPN, a third LAN belonging to a third VPN and a fourth LAN belonging to a fourth VPN, comprising:

a first interface for accommodating a first line connected to the first LAN and the second LAN, and for receiving multiplexed IP packets from the first and the second LANs via the first line, the IP packets from the first and the second LANs being encapsulated by a first protocol;

a second interface for accommodating a second line connected to the third LAN and a third line connected to the fourth LAN, and for receiving IP packets from the third LAN via the second line and IP packets from the fourth LAN via the third line, the IP packets from the third and the fourth LANs being encapsulated by a second protocol different from the first protocol;

means for identifying which of the first VPN and the second VPN to which an IP packet received at the first interface belongs by header information of the first protocol; and

means for identifying which of the third VPN and the forth VPN to which an IP packet received at the second

interface belongs by physical interface numbers assigned to interface between the second interface and the second line and interface between the second interface and the third line.

2. A route according to claim 1, further comprising:

- a first routing table for the first VPN, the first routing table mapping each IP addresses used in the first VPN to each of capsule headers used in the core network;
- a second routing table for the second VPN, the second routing table mapping each IP addresses used in the second VPN to each of capsule headers used in the core network;
- a third routing table for the third VPN, the third routing table mapping each IP addresses used in the third VPN to each of capsule headers used in the core network;
- a fourth routing table for the fourth VPN, the fourth routing table mapping each IP addresses used in the fourth VPN to each of capsule headers used in the core network; and
- a processing unit for adding an capsule header used in the core network to an IP packet belonging to the first VPN by referring the first routing table, adding an capsule header used in the core network to an IP packet belonging to the second VPN by referring the second routing table,

adding an capsule header used in the core network to an IP packet belonging to the third VPN by referring the third routing table and adding an capsule header used in the core network to an IP packet belonging to the forth VPN by referring the forth routing table.

3. A router according to claim 1, wherein the first protocol is an asynchronous transfer mode protocol and the header information is expressed in combined VPI and VCI values; and

the second protocol is PPP over SONET.

4. A method of setting up a router connected to a core network, a first local area network(LAN) belonging to a first virtual private network(VPN), a second LAN belonging to a second VPN, a third LAN belonging to a third VPN and a fourth LAN belonging to a fourth VPN, wherein the router receives multiplexed IP packets from the first and the second LANs via a first line, the IP packets from the first and the second LANs being encapsulated by a first protocol, receives IP packets from the third LAN via a second line and IP packets from the fourth LAN via a third line, the IP packets from the third and the fourth LANs being encapsulated by a second protocol different from the first

protocol and has a memory, the method comprising the steps of:

registering header information of the first protocol as a VPN identifier for identifying which of the first VPN and the second VPN to which an IP packet received from the first line belongs to the memory;

registering physical interface numbers assigned to interface between the router and the second line and interface between the router and the third line as a VPN identifier for identifying which of the third VPN and the forth VPN to which an IP packet received either the second line or the third line belongs.

5. A method of setting up a router according to claim 4, further comprising the step registering to the memory

a first routing table for the first VPN, the first routing table mapping each IP addresses used in the first VPN to each of capsule headers used in the core network, each of the capsule headers is adding to an IP packet from the first line having the corresponding IP address;

a second routing table for the second VPN, the second routing table mapping each IP addresses used in the second VPN to each of capsule headers used in the core network, each of the capsule headers is adding to an IP

packet from the first line having the corresponding IP address;

a third routing table for the third VPN, the third routing table mapping each IP addresses used in the third VPN to each of capsule headers used in the core network, each of the capsule headers is adding to an IP packet from the second line having the corresponding IP address;

a fourth routing table for the fourth VPN, the fourth routing table mapping each IP addresses used in the fourth VPN to each of capsule headers used in the core network, each of the capsule headers is adding to an IP packet from the third line having the corresponding IP address.

6. A method of setting up a router according to claim 4, wherein the first protocol is an asynchronous transfer mode protocol and the header information is expressed in combined VPI and VCI values; and

the second protocol is PPP over SONET.